

REMARKS

1. Objection to Claims 24 and 25

The Examiner has objected to the claims on the grounds that claim 23 is not present in the claim section, and thus, the numbering of claims 24-25 is improper.

Applicant has renumbered claims 24 and 25 to claims 23 and 24 respectively (renumbered claim 24 has been deleted).

2. Language Suggestion to Claim 4, 8, 12 and 19

The Examiner has suggested reciting binding agents by their general chemical nomenclature in claims 4, 8, 12 and 19.

Claims 8 and 19 have been deleted. Applicant has amended claims 4 and 12 according to the examiner's suggestion.

3. Rejection of Claims 1, 3-5, 7-9, 11-14, 16, 18-21 and 23-24(renumbered claims) Under 35 U.S.C. §102(b)

The Examiner has rejected claims 1, 3-5, 7-9, 11-14, 16, 18-21 and 23-24(renumbered claims) under 35 U.S.C. §102(b) as being anticipated by the Japanese publication JP 11-339846 (hereinafter, JP'846). The Examiner pointed out Table 3 in JP'846 showing the weight ratio of Zn-to-ZnO of 1:1(for Battery A31), 1.5:1(for Battery A32) and 3:1(for Battery A33).

Claims 5, 7, 8, 16, 18-21 and 24(renumbered claim) have been deleted. Applicant has amended independent claims 1, 9 and 23 (renumbered claim) to specify the ranges of the weight ratio of Zn to ZnO ("from greater than 1.5 - 2 to approximately 1")

and the amount of the compound selected from the group consisting of Be(OH)₂, Mg(OH)₂, Ca(OH)₂, Sr(OH)₂, Ba(OH)₂, Ra(OH)₂, and mixtures thereof (12%(w/w)).

As shown in “IN THE CLAIMS AMENDED”, claims 3 and 4 are dependent claims of claim 1 and claims 11-14 are dependent claims of claim 9, i.e., these claims have common elements to each independent claim (including an element of “the weight ratio of the Zn to ZnO ranges from greater than 1.5 - 2 to approximately 1” and “the a compound selected from the group consisting of Be(OH)₂, Mg(OH)₂, Ca(OH)₂, Sr(OH)₂, Ba(OH)₂, Ra(OH)₂, and mixtures thereof, wherein an amount of the compound is 12%(w/w)”.

JP’846 teaches away from the particular ranges of the weight ratio of Zn to ZnO of “from greater than 1.5 - 2 to approximately 1” and particular amount of Be(OH)₂, Mg(OH)₂, Ca(OH)₂ etc. (14%(w/w)).

Therefore, the rejection under 35 U.S.C. §102(b) based on the contention that they are anticipated by JP’846 should be withdrawn.

4. Rejection Under 35 U.S.C. §103(a)

4-1. Rejection of Claims 2-3, 6-7, 10-11 and 17-18

The Examiner has rejected claims 2-3, 6-7, 10-11 and 17-18 under 35U.S.C. §103(a) as being unpatentable over JP’846 in view of Charkey 5460899 (hereinafter, Charkey).

Claims 6-7 and 17-18. have been deleted.

As shown in “IN THE CLAIMS AMENDED”, claims 2-3 and 10-11 are dependent claims of claim 1 and claim 9 respectively, i.e., these claims have common elements to each independent claim (including an element of “the weight ratio of the Zn to ZnO

ranges from greater than 1.5 - 2 to approximately 1” and an amount of compound selected from the group consisting of $\text{Be}(\text{OH})_2$, $\text{Mg}(\text{OH})_2$, $\text{Ca}(\text{OH})_2$, $\text{Sr}(\text{OH})_2$, $\text{Ba}(\text{OH})_2$, $\text{Ra}(\text{OH})_2$, and mixtures thereof (12%(w/w)).

As noted above, JP’846 teaches away from not only particular ranges of the weight ratio of Zn to ZnO of “from greater than 1.5 - 2 to approximately 1” but also particular amount of $\text{Be}(\text{OH})_2$, $\text{Mg}(\text{OH})_2$, $\text{Ca}(\text{OH})_2$ etc. (14%(w/w)).

In addition to JP’846, Charkey also teaches away from these points.

In other words, both of these references have neither descriptions nor suggestions to pick up and adopt the particular ranges and amounts described above.

Therefore, even if JP’846 and Charkey would be combined, it would not have been obvious to one of ordinary skilled in the art at the time the invention was made to pick up and adopt the particular ranges of the weight ratio of Zn to ZnO of “from greater than 1.5 - 2 to approximately 1” and the particular amount of $\text{Be}(\text{OH})_2$, $\text{Mg}(\text{OH})_2$, $\text{Ca}(\text{OH})_2$ etc. (12%(w/w)).

4-2. Rejection of Claims 15 and 22

The Examiner also rejected claims 15 and 22 under 35 U.S.C. §103(a) as being unpatentable over JP’846 in view of the Japanese publication JP 62-143368 (hereinafter JP’368).

Claim 22 was deleted.

As shown in “IN THE CLAIMS AMENDED”, claim 15 is a dependent claim of claim 9, i.e., claim 15 have common element to claim 9 (including an element of “the

weight ratio of the Zn to ZnO ranges from greater than 1.5 - 2 to approximately 1” and the particular amount of $\text{Be}(\text{OH})_2$, $\text{Mg}(\text{OH})_2$, $\text{Ca}(\text{OH})_2$ etc. (12%(w/w)).

As noted above, JP’846 teaches away from the particular ranges of the weight ratio of Zn to ZnO of “from greater than 1.5 - 2 to approximately 1” and particular amount of $\text{Be}(\text{OH})_2$, $\text{Mg}(\text{OH})_2$, $\text{Ca}(\text{OH})_2$ etc. (14%(w/w)).

In addition to JP’846, JP’368 also teaches away from these points.

Therefore, even if JP’846 and JP’368 would be combined, at least it would not have been obvious to one of ordinary skilled in the art at the time the invention was made to pick up and adopt the particular ranges of the weight ratio of Zn to ZnO of “from greater than 1.5 - 2 to approximately 1” and the particular amount of $\text{Be}(\text{OH})_2$, $\text{Mg}(\text{OH})_2$, $\text{Ca}(\text{OH})_2$ etc. (12%(w/w)).

As shown in the specification of this application, the most important concept of present invention is to provide an alkaline based electrochemical cell assembled in not only discharged state but also in the charged state.

Examiner pointed out Table 3 in JP’846 showing the weight ratio of Zn-to-ZnO of 3:1(for Battery A33) in the Rejection Under 35 U.S.C. §102(b).

However, according to paragraph [0029] of JP’846, inventors of JP’846 examined capacities of all sealed alkaline-zinc storage batteries “after charged with a current of 100 mA to 1.95 V” (partial English translation of paragraph [0029] of JP’849). In other words, the batteries shown in example of JP’846 need to be charged before use. This means that the batteries used in example of JP’846 were in “discharged state”, and the reference teaches away from a battery assembled in a charged state.

On the other hand, as described above, the present invention enables to apply both discharged and charged state.

Furthermore, as shown in the specification of this application, one of important bases of the present invention is a novel knowledge that “for Zn/ZnO ratios >2 , the electrode is suitable for use in cells assembled in charged state only” (page 9, lines 5-6). Therefore, at least, the description in JP’846 (Zn-to-ZnO of 3:1) inhibits one of ordinary skilled in the art from anticipating the present invention which has particular ranges of the weight ratio of Zn to ZnO of “from greater than 1.5 - 2 to approximately 1”.

By adopting the particular range or amount, the present invention enables an anodic zinc electrode to be associated with both electrical cells assembled in not only discharged states but also charged state, and realizes excellent rechargeability under maintenance of high capacity (see EXPERIMENT NO.1, 2 and 4, and Fig.2, 3 and 5). These results are evaluated as remarkable and produce an unexpected result.

Therefore, the rejection under 35 U.S.C. §103(a) based on the contention of obviousness over JP’846 in view of Charkey or JP’368 should be withdrawn.

5. Conclusion


In light of the foregoing, Applicant submits that the present application should be in condition for allowance. Accordingly, reconsideration and passage to allowance of independent claims 1, 9 and 23, as well as dependent claims 2-4, and 10-15, is respectfully requested.

Should anything further be required, a telephone call to the undersigned at (312)
226-1818 is respectfully solicited.

Respectfully submitted,

FACTOR & LAKE, LTD.

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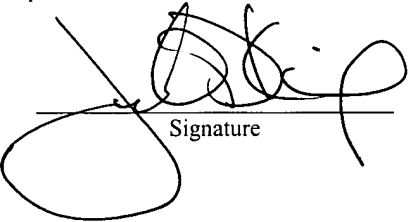
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Jacob D. Koering

Name of Applicant, assignee, applicant's attorney or
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Signature